



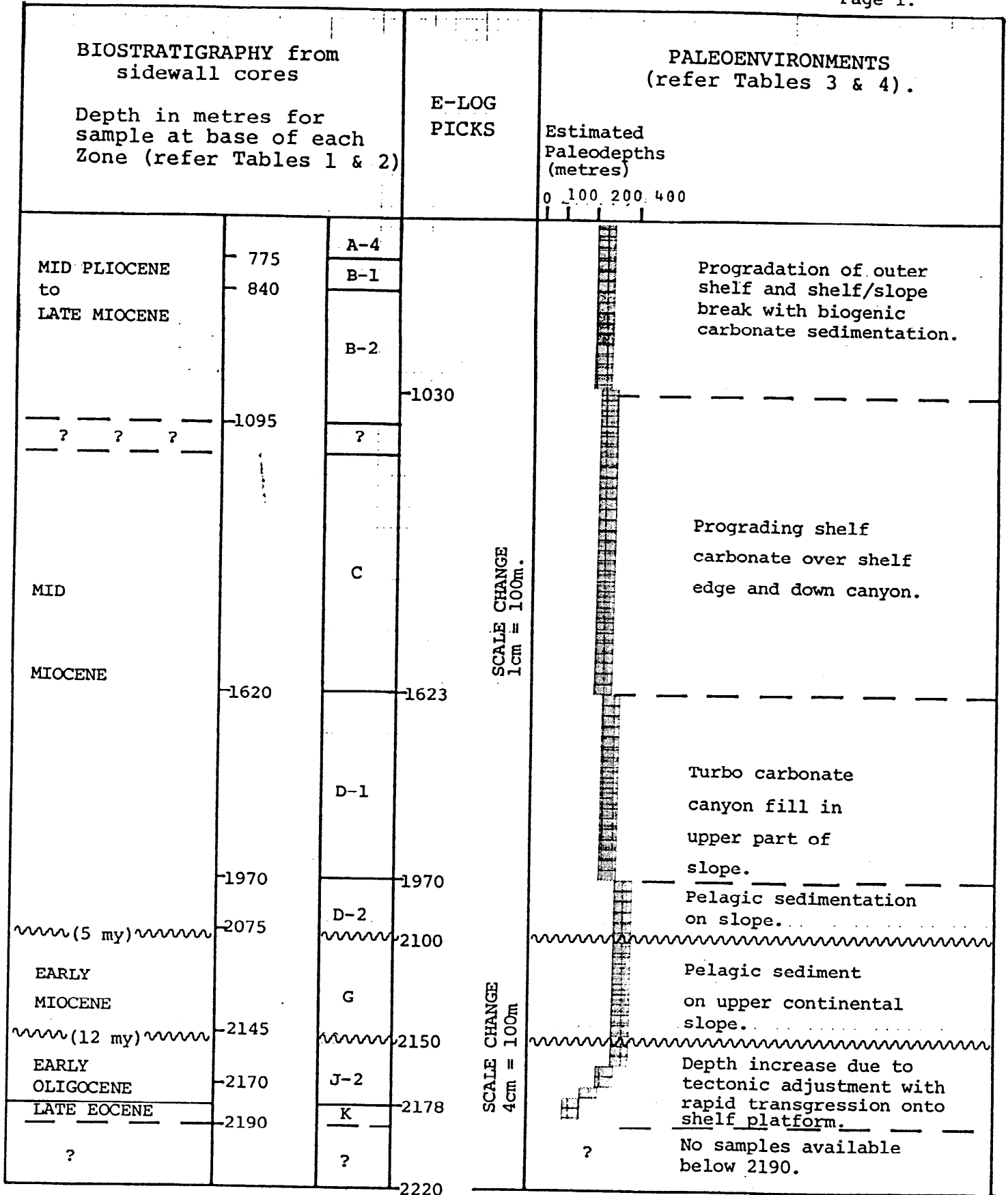
PE990311

THE FORAMINIFERAL SEQUENCE  
in  
BASKER SOUTH # 1,  
GIPPSLAND BASIN

for: SHELL DEVELOPMENT (AUSTRALIA) PTY. LTD.

March 8, 1984.

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~~~~(5 my)~~~~ = hiatus with time span parentheses.  
 N.B. change in vertical scale at 2100m.

FIGURE 1: INTERPRETED FORAMINIFERAL SEQUENCE in BASKER SOUTH # 1.

INTRODUCTION.

Forty three sidewall cores were submitted from BASKER SOUTH # 1, between 747 and 2190metres. All samples contained foraminifera in a sequence from Late Eocene to Mid Pliocene. However, as was common in the offshore Gippsland Basin, this sequence was twice interrupted; firstly by extending over most of the Oligocene into the Early Miocene, and later by a shorter hiatus at the top of the Early Miocene (refer Fig. 1 on previous page). Also in these Gippsland sequences, lateral facies changes over short distances make correlation difficult in a sedimentary regime dominated by submarine cutting and filling, and continental shelf edge progradation. This is exemplified by the comparison of the Basker # 1 with Basker South # 1 sequences which conclude this report.

Interpretations and conclusions drawn in this report are based on the same evidence cited in my reports for Basker # 1 (August 11, 1983) and Bignose # 1 (November 17, 1983).

The following Figures and Tables constitute this report:-

- FIGURE 1 : *INTERPRETED FORAMINIFERAL SEQUENCE* based on Tables 1 & 2.  
 TABLE 1 : *BIOSTRATIGRAPHIC DATA SUMMARY* with reliability of zonal picks.  
 TABLE 2 : *PLANKTONIC FORAMINIFERAL DISTRIBUTION.*  
 TABLE 3 : *SELECTED BENTHONIC FORAMINIFERAL DISTRIBUTION.*  
 TABLE 4 : *PALEOENVIRONMENTAL ANALYSIS* based on Table 3.

LATE EOCENE - ZONE K, 2190-2180m (?2220 to 2178 on E-logs).

The lower part of the Late Eocene interval was not represented by samples, so that its presence below 2190m can only be inferred from E-logs. This inference is supported by the fact that the benthonic assemblage at 2190m was indicative of a rapid sedimentary transgression on a mid shelf platform, suggesting that the initial, in-shore, phase of this transgression was represented in samples below 2190m.

The only real differences in the planktonic foraminiferal assemblages

between Zone K and Zone J-2 in Basker South # 1, was the presence of *Globigerina linaperta* in Zone K (at 2190 & 2180m) and its absence in Zone J-2 (at 2170 & 2157.7m). This implies a biostratigraphic position very high in the Eocene for the samples at 2190 and 2180m; once again supporting the contention that the Eocene sample suite was incomplete.

EARLY OLIGOCENE - ZONE J-2, 2170 to 2157.7m (2178 to 2150m on E-logs)  
and the "COBIA EVENT" HIATUS at 2150m (E-logs).

The rapid deepening of the depositional site apparent during the Late Eocene, continued and in fact accelerated during the earliest Oligocene; with the sample at 2157.7m having been deposited on the continental slope. This may have been a response to tectonic adjustment, associated with Late Eocene volcanism and uplift of the East Gippsland Highlands (Wellman, 1974).

The sudden change in planktonic components between the Zone J-2 sample at 2157.7m and the Zone G at 2145m, is the evidence of a hiatus of some 12 million years; during most of the Oligocene as well as the lower part of the Early Miocene. The "Cobia Event" Hiatus was widespread over the Gippsland Basin Deep. Despite the real change in the planktonic assemblages above the depositional break, there was no such dramatic alteration in benthonic components (compare Tables 2 & 3). Therefore, depositional depth was much the same before and after the "Cobia Event" in Basker South # 1; with deposition continuing on the continental slope. This stability in paleoenvironments across the "Cobia Event" has been noted in many Gippsland sequences and would imply that the event was not caused by any tectonic adjustment; such as during the Eo/Oligocene transition (see above).

One apparent difference in the carbonate sediment above the hiatus is that it was subjected to a greater degree of diagenesis than that below (refer Table 4).

EARLY MIOCENE - ZONE G, 2145 to 2126m (2145 to 2057m - E-Logs) and  
EARLY MIOCENE HIATUS at 2075m (E-Logs).

This deep water, continental slope carbonate was heavily recrystallised, yet almost complete planktonic assemblages representing Zone G, were recognised. Unfortunately, the sidewall core jar # 13, labelled 2110m, was empty, so that the interval could not be examined completely, but Zones F and E are probably missing between the Zone G sample at 2126m and the Zone D-2 sample at 2075m.

MID MIOCENE - ZONE D-2, 2075 to 2005m (2075 to 1970m on E-Logs).

The lowest appearance of *Orbulina universa* was at 2075m. Other species present, particularly *Globorotalia miozea miozea* and *G. praescitula*, indicate a position low in the Mid Miocene. Paleoenvironmentally, this interval was very similar to the Early Miocene sediment below the hiatus. Therefore, the hiatus may have been due to slumping on an unstable continental slope. It is noted that the carbonates in this interval are not as heavily recrystallised as those of the Early Miocene below the hiatus.

MID MIOCENE - ZONE D-1, 1970 to 1655m (1970 to 1623 on E-Logs).

Planktonic specimens within this interval were in general, poorly preserved, yet what identification was possible, confirmed a Zone D-1 designation. The difficulty in identification was due in part to carbonate diagenesis, but also to the fact that a high proportion of the specimens were very small (<.2mm); indicating size sorting in a high energy depositional regime. Size and shape sorting is also apparent in the benthonic assemblages with dominance of small lens and shaped forms such as *Cassidulina leavigata*. This sedimentary unit is believed to have been deposited as fill in a submarine canyon on the upper continental slope.

MID MIOCENE - ZONE C, 1620 to 1130m.

Presence, as well as preservation of planktonic foraminifera, fluctuates within this interval. Misplaced, inner shelfal elements, occur, suggesting

progradation of the shelf, accompanied by strong bottom currents, operating from the inner shelf to the shelf edge.

LATE MIOCENE to MID PLIOCENE - ZONES B-2, B-1 and A-4, 1095 to 747m.

This interval of prograding shelfal biogenic carbonates, contains abundant foraminiferal faunas, which exhibit size and shape sorting; for instance, note dominance of small size planktonics and the lens shaped benthonic *Cassidulina leavigata*. Together with the presence of misplaced inner shelf species, the size and shape sorted assemblages are evidence of high energy bottom currents associated with a seaward, prograding shelf.

COMPARISON WITH BASKER # 1.

Despite the proximity of Basker # 1 to Basker South # 1, there are differences in the sequences of sedimentary events during the Miocene. For instance -

| <u>BASKER # 1</u>                       | <u>BASKER SOUTH # 1</u> |
|-----------------------------------------|-------------------------|
| ZONE C                                  | ZONE D-2                |
| ~~~~~ <i>intra Miocene Hiatus</i> ~~~~~ |                         |
| ZONE F                                  | ZONE G                  |

From these differences in timing of sediment preserved on either side of the *intra Miocene Hiatus*, it could be assumed that the slumping on the unstable slope occurred at differing times when the two sequences are compared. Greater accumulation rates during the Late Miocene in Basker # 1, when compared with Basker South # 1, is reflection of later slumping in the former sequence.

The benthonic foraminiferal assemblages listed for the Mid and Late Miocene in Basker # 1 and Basker South # 1, are almost identical in sequence of occurrence of nominated species. However, the correlation between the two sequences is offset in time, when the planktonic foraminiferal biostratigraphy is superimposed; with shelf edge progradation commencing in the Mid Miocene Basker South # 1, but was delayed to Late Miocene in Basker # 1.

Such paleoenvironmental situations, as an unstable upper slope and prograding shelf edge, inhibit correlations by means other than proven biostratigraphic ones, even over a short distance; as between Basker # 1 and Basker South # 1.

REFERENCE.

WELLMAN, P., 1974 - Potassium-Argon ages on the Cainozoic Volcanic Rocks of Eastern Victoria, Australia. *J. Geol. Soc. Aust.*, 21; 359-376.

TABLE 1

MICROPALAEONTOLOGICAL DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 25.3m GL: -264m  
 WELL NAME: BASKER SOUTH # 1 TOTAL DEPTH: \_\_\_\_\_

| AGE         | FORAM. ZONULES | HIGHEST DATA    |        |                 |      | LOWEST DATA  |                 |     |                 |     |              |
|-------------|----------------|-----------------|--------|-----------------|------|--------------|-----------------|-----|-----------------|-----|--------------|
|             |                | Preferred Depth | Rtg    | Alternate Depth | Rtg  | Two Way Time | Preferred Depth | Rtg | Alternate Depth | Rtg | Two Way Time |
| PLEISTOCENE | A <sub>1</sub> |                 |        |                 |      |              |                 |     |                 |     |              |
|             | A <sub>2</sub> |                 |        |                 |      |              |                 |     |                 |     |              |
| PLIOCENE    | A <sub>3</sub> |                 |        |                 |      |              |                 |     |                 |     |              |
|             | A <sub>4</sub> | 747             | 1      |                 |      |              | 775             | 0   |                 |     |              |
| MIOCENE     | LATE           | B <sub>1</sub>  | 815    | 1               |      |              | 840             | 1   |                 |     |              |
|             |                | B <sub>2</sub>  | 890    | 1               |      |              | 1095            | 0   |                 |     |              |
|             | MIDDLE         | C               | 1165   | 1               |      |              | 1620            | 0   |                 |     |              |
|             |                | D <sub>1</sub>  | 1655   | 2               | 1725 | 1            | 1970            | 1   |                 |     |              |
|             |                | D <sub>2</sub>  | 2005   | 0               |      |              | 2075*           | 0   |                 |     |              |
|             |                | E <sub>1</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             | EARLY          | E <sub>2</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             |                | F               |        |                 |      |              |                 |     |                 |     |              |
|             |                | G               | 2126*  | 0               |      |              | 2145            | 0   |                 |     |              |
|             |                | H <sub>1</sub>  |        |                 |      |              |                 |     |                 |     |              |
| OLIGOCENE   | LATE           | H <sub>2</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             |                | I <sub>1</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             | EARLY          | I <sub>2</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             |                | J <sub>1</sub>  |        |                 |      |              |                 |     |                 |     |              |
|             |                | J <sub>2</sub>  | 2157.7 | 0               |      |              | 2170            | 0   |                 |     |              |
|             |                | K               | 2180   | 1               |      |              | 2190            | 0   |                 |     |              |
| EOCENE      | Pre-K          |                 |        |                 |      |              |                 |     |                 |     |              |

COMMENTS: No sample received below 2190m.

\*Sidewall core jar # 13, labelled 2110m, was empty.

- CONFIDENCE RATING:
- 0: SWC or Core - Complete assemblage (very high confidence).
  - 1: SWC or Core - Almost complete assemblage (high confidence).
  - 2: SWC or Core - Close to zonule change but able to interpret (low confidence).
  - 3: Cuttings - Complete assemblage (low confidence).
  - 4: Cuttings - Incomplete assemblage, next to uninterpretable or SWC with depth suspicion (very low confidence).

NOTE: If an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

DATA RECORDED BY: David Taylor. DATE: March 7, 1984.  
 DATA REVISED BY: \_\_\_\_\_ DATE: \_\_\_\_\_



| SIDEWALL CORES<br>Depth in metres | <i>G'ina linaperta</i><br><i>G'ina brevis</i><br><i>G'ina angiporoides</i> (SS)<br><i>G'ina tripartita</i><br><i>G'ina venezuelana</i><br><i>G'ina praeaeplis</i><br><i>G'ina eupartura</i><br><i>G'alia gemma</i><br><i>G'alia nana</i><br><i>G'alia murda</i><br><i>G'ina s. G'alia spp. indet (&lt;.2mm)</i><br><i>G'ina praebulloides</i><br><i>G'ina labiacrassata</i><br><i>G'alia testarugosa</i><br><i>G'oides trilobus</i><br><i>G'oides parawoodi</i><br><i>G'ina woodi connecta</i><br><i>G'ina woodi woodi</i><br><i>G'ina bulloides</i><br><i>G'ina ciproensis</i><br><i>G'alia miora miora</i><br><i>G'alia praescitula</i><br><i>G'alia zealandica</i> (SS)<br><i>G'alia bella</i><br><i>G'alia continua</i><br><i>Cat. dissimilis</i><br><i>G'alia siakensis/mayeri</i><br><i>Orb. universa</i><br><i>Pracorb. glomerosa</i><br><i>G'oides hispanicus</i><br><i>G'alia conica</i><br><i>G'alia peripheronda</i><br><i>G'alia miora conoidea</i><br><i>G'alia praemenardi</i><br><i>G'quad advena</i><br><i>G'alia peripheroacuta</i><br><i>G'ina nepenthes</i><br><i>G'alia miotumida</i><br><i>G'alia scitula</i><br><i>G'alia languensis</i><br><i>G'alia acotensis</i><br><i>G'ina decorsparta</i><br><i>G'alia conomioza</i><br><i>G'alia miocenica</i><br><i>G'alia punctulata</i><br><i>G'alia crassaformis</i><br><i>G'alia humerosa</i><br><i>G'ina falconensis</i> | PLANKTONIC FORAMINIFERAL BIOSTRATIGRAPHY |                                    |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------|
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ZONE                                     | Depth at Base                      |
| 747.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A-4                                      | MID PLIOCENE<br>to<br>LATE MIOCENE |
| 775.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | B-1                                      |                                    |
| 815.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 840.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | B-2                                      |                                    |
| 890.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 957.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Indet                                    |                                    |
| 997.0 →                           | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1024.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | C                                        |                                    |
| 1060.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1095.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MID MIOCENE                              |                                    |
| 1130.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1165.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1202.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1230.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1257.0 →                          | Indet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                          |                                    |
| 1307.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1335.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1375.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1410.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1445.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1515.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1550.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1585.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1620.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1655.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1690.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 1725.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1760.0 →                          | Indet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                          |                                    |
| 1795.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1830.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1865.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1900.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1935.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 1970.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2005.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2040.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2075.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2125.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2145.0 →                          | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                          |                                    |
| 2157.7 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 2170.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 2180.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
| 2190.0 →                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                          |                                    |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D-1                                      | EARLY MIOCENE                      |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | D-2                                      |                                    |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | G                                        | EARLY OLIGOCENE                    |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | J-2                                      |                                    |
|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | K                                        | LATE EOCENE                        |

KEY:  
• = <20 specimens  
x = >20 specimens  
D = Dominant >60% specimens  
~~~~~ = definite hiatus  
indet = indeterminate taxa due to diagenesis.

TABLE 2: PLANKTONIC FORAMINIFERAL DISTRIBUTION - BASKER SOUTH # 1.

David Taylor, March 2nd, 1984.

| SIDEWALL CORES<br>Depth in metres | CONTINENTAL SLOPE<br>and UBIQUITOUS           | SHELF/SLOPE BREAK                 | INNER<br>SHELF | PLANKTONIC<br>FORAMINIFERAL<br>BIOSTRATIGRAPHY |                            |
|-----------------------------------|---|-----------------------------------|----------------|--|----------------------------|
|                                   |   |                                   |                | ZONE   | Depth<br>at<br>Base        |
| 747.0                             | <i>Pulvulinia granulosa</i>                   | <i>Cassidulinina levigata</i>     |                | A-4  | 775<br>MID. Pliocene<br>to |
| 775.0                             | <i>Trochammina cf. globigeriniformis</i>      | <i>Mononella</i> spp.             |                | B-1  |                            |
| 815.0                             | <i>Reopbar</i> spp.                           | <i>Cibicides opacus</i>           |                | 840<br>LATE MIOCENE                            |                            |
| 840.0                             | <i>Sphaeroidina bulloides</i>                 | <i>Cassidulinina subglobosa</i>   |                |  |                            |
| 890.0                             | <i>Siphonina australis</i>                    | <i>Discorbinaella bertheloti</i>  |                | 1095<br>Indet                                  |                            |
| 957.0                             | MOOSARIDS                                     | <i>Yurgulina</i> spp. (plaxus)    |                |  |                            |
| 997.0                             | <i>Melonis simplex</i>                        | <i>Yurgulina solidani</i>         |                | 1620<br>MID MIOCENE                            |                            |
| 1024.0                            | <i>Cibicides pseudoungerianus</i>             | <i>Bolivina</i> spp. (smooth)     |                |  |                            |
| 1060.0                            | <i>Cyclamina</i> spp.                         | <i>Bolivina quadrilata</i>        |                | 1970<br>D-2                                    |                            |
| 1095.0                            | <i>Bolivina seducta</i>                       | <i>Cibicides molestus</i>         |                |  |                            |
| 1130.0                            | <i>Cribratosaides</i> sp.                     | <i>E. petragrina</i>              |                | 2170<br>EARLY OLIGOCENE                        |                            |
| 1165.0                            | <i>Caudryna compressa</i>                     | <i>Siphonigerina proboscidea</i>  |                |  |                            |
| 1202.0                            | <i>Textularia goessii</i>                     | <i>Cibicides subaifingeri</i>     |                | 2190<br>LATE EOCENE                            |                            |
| 1230.0                            | <i>C. kareriformis</i>                        | <i>Loxostomum</i> sp. nov. Barker |                |  |                            |
| 1252.0                            | <i>C. dorsalis umbonifer</i>                  | <i>Rectoglybalina cornatula</i>   |                |  |                            |
| 1307.0                            | <i>Zenticulina</i> spp.                       | <i>Cibicides thiersi</i>          |                |  |                            |
| 1335.0                            | <i>Rhabdammina</i> s. <i>Bathysiphon</i> spp. | <i>Discorbinaella pacifica</i>    |                |  |                            |
| 1370.0                            | <i>Osaquularia bangkensis</i>                 | <i>Naeslerella morgani</i>        |                |  |                            |
| 1410.0                            | <i>Fasurina</i> spp.                          | <i>Bolivina alata</i>             |                |  |                            |
| 1440.0                            | <i>Lagena</i> spp. (spherical)                | <i>Cibicides lobatulus</i>        |                |  |                            |
| 1515.0                            | <i>Gyrdidicoides kaslandica</i>               | <i>Textularia</i> spp.            |                |  |                            |
| 1550.0                            | <i>Haplophragmoides</i> spp.                  | <i>Textularia moria</i>           |                |  |                            |
| 1585.0                            | <i>Sigmollopsis schlumbergi</i>               | <i>Discorbinaella mitchelli</i>   |                |  |                            |
| 1620.0                            | <i>Furco depressa</i>                         |                                   |                |  |                            |
| 1690.0                            |   |                                   |                |  |                            |
| 1725.0                            |   |                                   |                |  |                            |
| 1760.0                            |   |                                   |                |  |                            |
| 1795.0                            |   |                                   |                |  |                            |
| 1830.0                            |   |                                   |                |  |                            |
| 1865.0                            |   |                                   |                |  |                            |
| 1900.0                            |   |                                   |                |  |                            |
| 1935.0                            |   |                                   |                |  |                            |
| 1970.0                            |   |                                   |                |  |                            |
| 2005.0                            |   |                                   |                |  |                            |
| 2040.0                            |   |                                   |                |  |                            |
| 2075.0                            |   |                                   |                |  |                            |
| 2126.0                            |   |                                   |                |  |                            |
| 2145.0                            |   |                                   |                |  |                            |
| 2157.0                            |   |                                   |                |  |                            |
| 2170.0                            |   |                                   |                |  |                            |
| 2180.0                            |   |                                   |                |  |                            |
| 2190.0                            |   |                                   |                |  |                            |

KEY:-  
 \* = <20 specimens  
 x = 20-50 specimens  
 D = Dominant  
 >50% specimens  
 [ = worn, environmentally misplaced specimens  
 www = definite hiatus  
 indet = indeterminate taxa due to diagenesis

TABLE 3. PLANKTONIC FORAMINIFERAL DISTRIBUTION - BASKER SOUTH # 1  
 David Taylor March 5, 1964

| SIDEWALL CORES<br>Depth in metres | GROSS FORAMINIFERAL ASSEMBLAGE CHARACTERS |                     |                     |               |              | RESIDUE GRAINS   |            |      |                   |          |            | PALEO-ENVIRONMENTAL ASSESSMENT |           | PLANKTONIC FORAMINIFERAL BIOSTRATIGRAPHY  |      |               |     |                |
|-----------------------------------|---|---------------------|---------------------|---------------|--------------|------------------|------------|------|-------------------|----------|------------|--------------------------------|-----------|---|------|---------------|-----|----------------|
|                                   | Total forams count                        | % planktonic forams | ASSEMBLAGE FEATURES | ENERGY REGIME | PRESERVATION | MINOR COMPONENTS |            |      |                   |          |            | MAJOR COMPONENTS               |           | MID-INNER SHELF (<100m)<br>OUTER SHELF (200-100m)<br>PROGRADING SHELF EDGE (~250m)<br>CANYON in SLOPE<br>UPPER SLOPE (400-250m)<br>E-LOG CHARACTER CHANGE | ZONE | Depth at Base | AGE |                |
|                                   |   |                     |                     |               |              | Pyrite           | glauconite | Mica | F= subord-amy qtz | limonite | f. ing qtz | echinoid spines                | ostracods |   |      |               |     | fish fragments |
| 747.0                             | 2000                                      | 70                  | F S                 | HIGH          | G            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 775.0                             | 1000                                      | 70                  | F S                 | HIGH          | G            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 815.0                             | 2000                                      | 50                  | F S                 | HIGH          | G            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 880.0                             | 1000                                      | 70                  | F S                 | HIGH          | G            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 890.0                             | 2000                                      | 80                  | F S                 | HIGH          | G            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 957.0                             | 1500                                      | 80                  | F S                 | HIGH          | M            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 997.0                             | 1000                                      | 80                  | F S                 | HIGH          | M            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1024.0                            | 7   | 7                   | F S                 | HIGH          | Y            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1060.0                            | 2000                                      | 80                  | F S                 | HIGH          | M            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1095.0                            | 1000                                      | 80                  | F S                 | HIGH          | M            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1130.0                            | 7   | 2                   | F S                 | HIGH          | P            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1165.0                            | 1000                                      | 80                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1202.0                            | 1000                                      | 80                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1230.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1257.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1307.0                            | 7   | 7                   | F S                 | HIGH          | M            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1335.0                            | 7   | 7                   | F S                 | HIGH          | P            |                  |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1375.0                            | 300                                       | 80                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1410.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1445.0                            | 100                                       | 80                  | F S                 | HIGH          | P            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1515.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1550.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1585.0                            | 300                                       | 80                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1620.0                            | 500                                       | 50                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1655.0                            | 1000                                      | 80                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1690.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1725.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1760.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1795.0                            | 500                                       | 95                  | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1830.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1865.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1900.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1935.0                            | 7   | 7                   | F S                 | HIGH          | VP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 1970.0                            | 100                                       | 95                  | F S                 | HIGH          | P            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2005.0                            | 2000                                      | 95                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2040.0                            | 500                                       | 95                  | F S                 | HIGH          | MP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2075.0                            | 500                                       | 95                  | F S                 | HIGH          | MP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2126.0                            | 500                                       | 99                  | F S                 | HIGH          | P            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2145.0                            | 2000                                      | 95                  | F S                 | HIGH          | MP           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2157.7                            | 3000                                      | 96                  | F S                 | HIGH          | EX           | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2170.0                            | 3000                                      | 99                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2180.0                            | 500                                       | 90                  | F S                 | HIGH          | P            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |
| 2190.0                            | 1000                                      | 95                  | F S                 | HIGH          | M            | C                |            |      |                   |          |            |                                |           |   |      |               |     |                |

**KEY:**

[ = misplaced grains from shallow water

S = size & shape sorted

**Preservation Code:**

EX = excellent

G = good

M = moderate

P = poor

VP = very poor

**Distribution Frequency:**

A = Abundant; 1-50 grains

C = Common; >20 grains

r = rare; <20 grains

TABLE 4: PALEOENVIRONMENTAL ANALYSIS - BASKIN SOUTH #1 (refer also Benthonic Distribution, Table 3)